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POIGNANT EXPERIENCES AND THE NONTELEOLOGICAL TEACHABLE MOMENT

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This article focuses on the ‘teachable moment’ that occurs when teachers and students engage in meaningful inquiry regarding problematic situations involving themselves and the subject matter being taught. While the teachable moment is nearly always conceived teleologically, the authors here discuss the educative potential of nonteleological teachable moments which are not driven by predetermined curricular objectives but elicited by poignant experiences. They present empirical examples of three types of teachable moments and discuss these with the help of pragmatist didactic models. This shows a fourfold pedagogical value of nonteleological teachable moments: they trigger a strong intrinsic motivation to learn, they are subjectivating as they appeal to the participants as persons and not merely as students compliantly fulfilling tasks, they can give rise to collective inquiry and learning in which the object of the poignant experience becomes a shared matter of concern, and they are incubators for creativity.

Keywords: teachable moment, Dewey, aesthetic encounter, inquiry, companion meaning

Expériences marquantes et moments propices à l’enseignement

Cet article se concentre sur le « moment propice à l’enseignement » qui se produit lorsque les enseignants et les élèves s’engagent dans une enquête significative sur des situations problématiques les concernant et concernant la matière enseignée. Alors que le moment propice à l’enseignement est presque toujours conçu de manière téléologique, les auteurs discutent ici du potentiel éducatif des moments propices à l’enseignement non téléologiques qui ne sont pas motivés par des objectifs curriculaires prédéterminés, mais suscités par des expériences marquantes. Ils présentent des exemples empiriques de trois types de moments propices à l’enseignement et les analysent à l’aide de modèles didactiques pragmatistes. Il en ressort une quadruple valeur pédagogique des moments pédagogiques non téléologiques : ils déclenchent une forte motivation intrinsèque à apprendre, ils sont subjectivants car ils s’adressent aux participants en tant que personnes et pas seulement en tant qu’élèves accomplissant des tâches avec complaisance, ils peuvent donner lieu à une enquête et à un apprentissage collectifs dans lesquels l’objet de l’expérience marquante devient un sujet de préoccupation commun, et ils sont des incubateurs de créativité.

Mots-clés : moment propice à l’enseignement, Dewey, rencontre esthétique, enquête, sens de l’accompagnement

INTRODUCTION

This article focuses on the ‘teachable moment’ – that is, those moments that occur in the classroom “when teachers and students engage in meaningful inquiry regarding some problematic situation involving themselves and the subject matter being taught.” (Garrison 2010: xv) The teachable moment is nearly always conceived teleologically. By this, we mean that teachable moments are usually pictured as students becoming receptive to learning some predetermined curricular objective. Frequently, the objective is keyed to predetermined learning standards that will eventually be assessed by some sort of state-mandated test. Here we pursue what we will call the ‘nonteleological teachable’ moment.

The nonteleological teachable moment is not driven by predetermined curricular objectives. However, such moments can emerge naturally within the normal activities of teleological teaching. We identify and discuss three types of how this emergence can occur naturally and discuss their educative potential if the teacher does not suppress them under the pressure of realizing predetermined learning objectives and securing good test scores.

Our idea of the teachable moment is built on what we will call the primacy of the aesthetic encounter. We are inspired by John Dewey’s (1926, 1930, 1938b) writings on how pre-cognitive, pre-reflective, qualitative situations provide the context ‘for all inquiry’ (Garrison 2010: 86). Within every inquiry, noncognitive components like quality, need, desire, sensory imagination, sympathy, and selective interest will always operate within the background context of thought that precedes the emergence of cognitive problem-solving.

In the title we use the word “poignant”. The 2023 Oxford English Dictionary (OED) gives multiple definitions of the word “poignant”. In doing so, it uses such phrases as “the experience of being, deeply and spontaneously moved”, what “goads or stimulates,” “to provoke an emotional response, esp. by introducing a contentious, delicate, or poignant subject,” “acting keenly on the sense or emotions,” “grief or compassion”, and “strong desire or longing.” Such emotions and feelings are often intense. They are also often complex, ambivalent, and indeterminate.

We will use the phrase ‘poignant experience’ to designate passionate instances of the primacy of

the aesthetic encounter, which are the immediate precursor of nonteleological teachable moments. Poignant experience involves a strongly felt disruption in normal teaching and learning activities that forces us to stop what we are doing and attend to things usually unrecognized, ignored, and sometimes unwanted. It disturbs us in surprising, even shocking, ways. Such passionate experience dismantles expectations, frequently leading to a sudden redirection of thought, action, and inquiry. One experiences a desire to understand something new, exciting, and perhaps even a bit frightening. Care and concern arise as one becomes spontaneously engaged with unanticipated subjects of great interest. Sadly, most often such magical moments are suppressed for the sake of linear state-mandated learning.

In the nonteleological teachable moment, the student is intrinsically motivated to engage in learning and inquiry. Frequently, so too is the teacher. Although not strictly necessary, the ideal instance of the nonteleological teachable moment occurs when both student and teacher enthusiastically engage in a shared creative inquiry regarding something of common interest and everyone in the class desires to explore possibilities together.

It is an indictment of the currently dominant models of curriculum, teaching, and testing that both teachers and curriculum tend to actively suppress nonteleological teachable moments. It is also an irony. We say this because many of the topics typically covered even in a narrow state-mandated curriculum may, as we will see, naturally arise in a nonteleological teachable moment if one only loosens up scope and sequencing.

As explained in detail below, the educative potential of nonteleological teachable moments is related to opportunities to make unexpected meaning and value from poignant experiences. Some interesting ways poignant experiences can occur are when values, meanings, or curriculum goals that have consciously or unconsciously been placed in the pedagogical background or margin suddenly become the foreground and take center stage. Here we will specifically examine how this may happen in three different ways.

In what follows, we first present three pragmatist didactical models that help to understand and investigate the emergence and pedagogical potential of nonteleological teachable moments. Next,

we present and discuss three empirically observed examples. They differ as to how nonteleological teachable moments occur as well as the way these are didactically handled by teachers and how this affects students' learning. We conclude the article with a discussion of how teachers' didactical work regarding nonteleological teachable moments may overcome the above-mentioned irony if a time and space can be created to circumvent impediments that come with restrictive curriculum and assessment policies.

THREE PRAGMATIST DIDACTICAL MODELS

In this section, we present three didactical models inspired by pragmatist theory that are crucial for understanding the didactical challenges and pedagogical potential that accompany nonteleological teachable moments. The first one concerns the transactional perspective on encounters and the learning that follows from that. The second describes the learning context and trajectory, and the third model is about companion meanings and companion values. Here, we will focus on those central aspects of the models that help us to understand and explain the three types of nonteleological teachable moments presented in the subsequent section. The models offer us the conceptual resources to understand the educational potential of nonteleological teachable moments as they contain *intrinsic interest* amongst the students in the subject matter and elicit *unexpected existential, ethical, and political experiences and reflections*. They also help to illuminate the importance of teachers' *didactical work* for optimally unlocking the available potential.

Before we present the models, we need to clarify our approach to meaning-making. Pragmatists like to employ a first-person perspective – a living-through perspective – on meaning-making. Such an approach tries to recall or imagine how things appear and feel from the perspective of the acting persons encountering the world and themselves. This resembles Wittgenstein's (1953) focus on language users and language being situated in specific activities (language games). The approach is often called a *use theory* of language because it emphasizes the action of those *participating* in some social practice (e.g., the social practice of schooling). The opposite of that perspective is the *spectator perspective*, i.e.,

taking the position of an observer, not participating in the activity. These are two very different perspectives although it would be wrong to see them as dichotomies. Even if scientific investigations demand taking a *spectator position*, it is still possible to choose which perspective to use in investigations, and the models we present below are constructed by using a living-through perspective.

A Transactional Perspective on Encounters and Learning

In the first model, the concept of 'encounter' is pivotal. As living creatures, we are in such constant transaction with the world through encounters that we become drawn into or stage ourselves. It is in and through encounters and the experiences these constitute that we learn and develop. Experience, Dewey (1938a) argues, is always what it is because of a transaction taking place between a sentient being (e.g., a person) and their environment. The encountered environment consists of various things: persons with whom one is talking, the subject talked about, toys one is playing with, a book one is reading (in which the enviroing conditions may be situated in another time and space or an imaginary context), the materials of a performed experiment, etc. Thus, the environment consists of "whatever conditions interact with personal needs, desires, purposes, and capacities to create the experience which is had. Even when a person builds a castle in the air he is interacting with the objects which he constructs in fancy." (Dewey, 1938a: 44) Through encounters and experiences, both the person and the environment change simultaneously and reciprocally – i.e., in the transaction (Dewey & Bentley, 1949).

Learning in and through encounters takes shape through alternating phases of doing and undergoing. We must experience the consequences of our actions to learn. In Dewey's (1934) words:

There is [. . .] an element of undergoing, of suffering in its large sense, in every experience. Otherwise there would be no taking in of what preceded. For 'taking in' in any vital experience is something more than placing something on the top of consciousness over what was previously known. It involves reconstruction (42).

Thus, meanings, in terms of knowledge, skills, values, identities, etc., created in and through encounters are produced transactionally. Persons and their environments transform in transaction as

things and event belonging to the world, physical and social, are transformed through the human context they enter, while the live creature is changed and developed through its intercourse with things previously external to it (Dewey, 1934: 257).

Every encounter, every experience, thus simultaneously changes the person and their environment. It has an “active side which changes in some degree the objective conditions under which experiences are had” (Dewey, 1938a: 39). Simultaneously, “every experience enacted and undergone modifies the one who acts and undergoes” (Dewey, 1938a: 35). Thus, the phases of doing and undergoing form a transactional unity which is a precondition for learning and meaning-making in general. Learning, then, is not understood as something that goes on merely inside a person. While it influences the formation of personal attitudes and desire and purpose, it simultaneously affects environing conditions.

Besides this simultaneous and reciprocal transformation of persons and their environments, learning is, from a transactional perspective, also conceived as being characterized by the principle of continuity (Dewey, 1928). Continuity, as well as change, are in a transactional perspective perceived as happening in two ways. The first one is happening in the unity of doing and undergoing. In each doing, we are actualizing earlier experience in a new situation since no two situations are identical. Therefore, the actualization is always a re-actualization. Thus, continuity and change always come together in our doings. This means that learning should be understood as making new experiences by reconstructing past experiences in a purpose-driven process consisting of alternating doings and undergoings. What we retain from the past and what we expect from the future, Dewey (1934) argues, operate as a direction in the present. The second way continuity and change come into existence is between subsequent different units of doing and undergoing. Any change that occurs in one unit affects “the quality of subsequent experiences. For it is a somewhat different person who enters into them” (Dewey, 1938a: 35). Among other

things, our needs, desires, and intentions are being constantly modified as we sequentially move from the past to the present to the future.

The word “teaching,” like the word “loving,” is an intentional act verb. Teaching is an intentional activity. Therefore, we must discuss Dewey’s nonteleological perspective regarding intentionality (purpose, aims, goals, and the like). Hans Joas (1996) recognizes that Dewey has a nonteleological understanding of intentionality and means-ends reasoning. The ends provide the intent (i.e., purposes, aims, and goals) of intelligent action. Means-ends reasoning is practical reasoning. For Dewey, it is the only type of reasoning. Even if one disagrees with Dewey, certainly practical reasoning is the kind of reasoning those engaged in any practice, including teaching, will ordinarily require.

Joas emphasizes the spontaneity and *creativity* of Dewey’s means–ends schema when he observes that Dewey contrasts “action in pursuit of externally set goals” with “the ideal of action infused with meaning” (153). For Dewey, as Joas realizes, it is a mistake to assume “the actor generally has a clear goal, and that it only remains to make the appropriate choice of means. On the contrary, the goals of actions are usually relatively undefined, and only become more specific as a consequence of the decision to use particular means” (154). As Joas recognizes, “Reciprocity of goals and means . . . signifies the interaction of the choice of means and the definition of goals” (154). Externally fixed, predetermined goals lie beyond the reflective process intrinsic to creative action. Following Dewey, Joas recognizes nonlinear, nonteleological intentionality is critical for engaging in creative action. Taking advantage of the teachable moment requires the kind of creative self-expression good teachers so sincerely seek and good students crave.

From the perspective of didactics and teaching, it is vital to realize that, although learning happens all the time in and through a myriad of encounters, certain encounters are more educative than others. As Dewey (1938a) wrote: “The belief that all genuine education comes about through experience does not mean that all experiences are genuinely or equally educative. Experience and education cannot be directly equated to each other. For some experiences are mis-educative” (25). In this article, we focus on situations where encounters create disruptive

poignant experiences that trigger unexpected existential, ethical, and political reflections and inquiries. As we will show, these encounters are very precious due to their potential to initiate valuable teachable moments. Teachers can try to intentionally plan for them or, conversely, try to avoid or ignore them. Either way, the outcome cannot be predicted or guaranteed. However, when such experiences occur, we want to be prepared to use them and optimally realize their educative potential if the situation allows.

Learning Context, Learning Trajectory, and Inquiry

Recall that for our paper, we understand nonteleological teachable moments as occurring when students, and maybe teachers too, feel compelled to engage in inquiry arising from some problematic situation regarding the subject matter. Here we will add some distinctions necessary for refining this idea.

We are especially interested in nonteleological teachable moments because here students, and teachers, are stimulated by their own needs, desires, and purposes to learn by engaging in their own creative, and perhaps critical, inquiry. Such inquiry can, ironically, lead to better learning of the larger prescribed curriculum because it allows students to become

internally motivated to learn while allowing teachers the creative autonomy they need and crave.

This section will construct a model that establishes the learning trajectory. This model describes two basic steps in the trajectory of learning: (1) the establishment of a problematic situation that sets the context of inquiry and (2) the trajectory of inquiry consisting of reflections and experimentation. In step (1), we will distinguish between (a) the pre-cognitive primacy of the *disunified* aesthetic encounter with special emphasis upon poignant experience and (b) the cognitive judgment of such aesthetical poignant experience as being problematic although not yet stated as a determinate problem. The judgment that an experience is problematic marks the transition to step 2. In step (2), we will reiterate the role of steps 1a and 1b of inquiry followed by (2a) five phases of inquiry that establish the learning trajectory and (2b) the termination of inquiry in a *unified* aesthetic experience.

Dewey's above-described transactional understanding of encounters, experience, and learning as well as his work on inquiry inspired the context and trajectory model presented below (figure 1). Like all models, it is a simplification: it describes a sequence that can be analytically discerned in the continuous alternations of doings and undergoings of individuals that constitute learning.

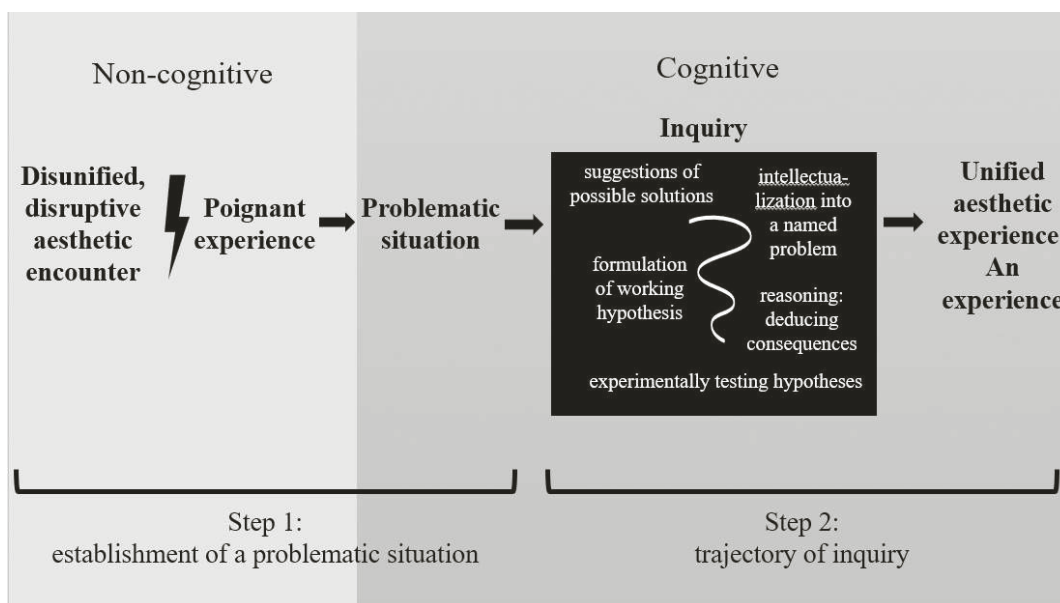


Figure 1. Learning trajectory

The first step: The primacy of the aesthetic encounter, poignant experience, and the problematic situation as the context of inquiry

To understand the “logic” of our model, we turn to Dewey’s (1938b) *Logic: The Theory of Inquiry*. The subtitle is perfect for our purposes. For Dewey, the task of inquiry is to transform “*an indeterminate situation into one that is so determinate in its constituent distinctions and relations as to convert the elements of the original situation into a unified whole*” (1938b:108). The transformation of the indeterminate context of inquiry is the trajectory of inquiry, the learning trajectory of the teachable moment. In this section, we will identify the indeterminate situation with what we call the primacy of the aesthetic encounter.

For Dewey, the “indeterminate situation which evokes inquiry” is tensive, “uncertain, unsettled, disturbed” (109). Such primordial experience is *had*, not known. Such experience is the primacy of the aesthetic encounter. It is the *conditional context* of any inquiry. The indeterminate situation is a disruption of organism-environment coordination (e.g., student-classroom, student-subject matter). It “concerns the interaction of organic responses and environing conditions,” which transpires when our habits, ideas, ideals, or purposes fail us (111). The conditional context of inquiry arises from a *transactional encounter*.

The highly intense poignant experience that dismantles expectations and spontaneously redirects inquiry and creative effort develops within the disruptive experience. Thus, the nonteleological teachable moment occurs when the original inquiry – that is, the lesson plan in pursuit of a predetermined pedagogical objective – suddenly gives way to unanticipated, perhaps unwanted, concerns and questions about the subject matter.

The rupture of functional coordination in the transactional encounter with the physical and cultural environment creates disequilibrium, giving rise to an embodied need, which, in turn, gives rise to a desire to restore organism-environment equilibrium. Dewey (1938b) declares that

living may be regarded as a continual rhythm of disequilibrium and recoveries of equilibrium . . .

the state of disturbed equilibrium constitutes need. The movement towards its restoration is search and exploration. The recovery is fulfillment or satisfaction (34).

This is the start, trajectory, and sought-for terminus of all inquiry in its Darwinian rawness.

Need characterizes the disrupted situation. If this need is connected to existential doubts, questions, tasks, etc., it carries with it an intrinsic “fuel,” a desire, to become engaged in intentional, purposeful reflection, inquiry, search experimentation, and such. That is the motivational logic of existentially meaningful education. Such desire may arise from feelings of insecurity and defiance but also curiosity, excitement, and wonder. We will return to this motivational logic shortly, but first, let us become clearer as to exactly what constitutes the primacy of the aesthetic encounter.

For Dewey, “a situation is a whole in virtue of its immediately pervasive quality. When we describe it from the psychological side, we have to say that the situation as a qualitative whole is sensed or felt” (73). He continues to claim the “pervasively qualitative is also unique; it constitutes each situation an individual situation, indivisible and unduplicable [. . .]. Without its controlling presence, there is no way to determine the relevancy, weight or coherence of any designated distinction or relation” (74). However, he warns the reader that the qualitative situation is not “a feeling or an emotion or anything mentalistic” (74). Rather, the “feeling, sensation and emotion have themselves to be identified and described in terms of the immediate presence of a total qualitative situation” (74). We must separate the feeling and emotion from the qualitative primacy of the aesthetic encounter, which is the reference to the affective state. The distinction is between having a qualitative experience and having a feeling of a qualitative experience. The distinction is subtle and often unnecessary for most practical purposes since what we feel frequently follows extremely quickly upon having a qualitative experience.

Hence, while we may distinguish the aesthetical experience, as the primacy of the aesthetic encounter, from feeling and emotion, nonetheless they are intimately related. Thus, from a first-person perspective, an aesthetical experience, as part of an aesthetical encounter, may readily be described as an embodied

feeling of a disruptive quality. What is felt is a quality and an intensity as a whole (see also further below), but the quality and the intensity have not yet been cognitively determined (identified, named, judged, and such), much less made meaningful. The term “poignant” is here used to denote that the aesthetical experience (the felt-ness) has a very high intensity, which often is described as unexpectedly disruptive, deeply moving, goading, etc. by people who, later in retrospection, may meaningfully communicate their experience.

Another way to understand what Dewey meant by quality is to imagine an encounter with a brilliant red color for the first time – for example, in a sunset. The experience is an immediate sentient sensory experience of a quality that can become intelligible, and can be named as a specific red color. In that sense, an immediate quality is felt before it is known. Of itself, the primacy of the aesthetic encounter is the basic form of existence; it is more primordial even than the passions it may arouse. In his essay, “Qualitative Thought,” a title that is an affront to the intellectualist who thinks we only have a cognitive relation to existence, Dewey (1930) remarks that the “world in which we immediately live, that in which we strive, succeed, and are defeated is pre-eminently a qualitative world” (243). This is the “pre-cognitive unsettled situation” that can only be settled by subsequent inquiry (Dewey, 1938b: 121).

In “Qualitative Thought,” Dewey clarifies how the qualitative unity of a situation may control the inquiry by, an admittedly imperfect, analogy to how a single inarticulate quality unifies any work of art. In such a work, “the quality of the whole permeates, affects, and controls every detail” (247). For the capable artist and art enthusiast, “The underlying unity of qualitiveness regulates pertinence or relevancy and force of every distinction and relation; it guides selection and rejection and the manner of utilization of all explicit terms” (247-248). For the artist or the student and teacher in, for example, the science classroom, “This quality enables us to keep thinking about one problem without our having constantly to stop to ask ourselves what it is after all that we are thinking about. We are aware of it not by itself but as the background” (248). Andersson, Garrison & Östman (2018: 29) suggest that Dewey is likely thinking in terms of the ancient Greek

aisthetikos, meaning sentient, sense, sensitivity, and perceptiveness.

Aisthetikos is a nice word for expressing what we mean by the primacy of the aesthetic encounter that controls the subsequent process that transforms the indeterminate situation into a “unified whole.” Later we will distinguish the primacy of the immediate qualitative pre-reflective aesthetic encounter (*aisthetikos*) from the mediated post-reflective consummatory aesthetic experience, what Dewey calls “an experience,” that concludes any artistic process, including the art of inquiry.¹

We want to address the elusive transition from the pre-cognitive, pre-reflective primacy of the qualitative aesthetic encounter, perhaps poignant, to the most rudimentary cognition. We are getting ahead of ourselves, but it is easier to address this transition here in preparation for the next section.

The primacy of the aesthetic encounter is not, of itself, statable. Nonetheless, “Discourse may, however, point out the qualities, lines and relations by means of which a pervasive unifying quality is achieved” (75). However, “so far as this discourse is separated from *having* the immediate total experience, a reflective object takes the place of an esthetic one” (75). The statement of a problem is cognitive; it replaces the pre-cognitive anoetic situation. There is, however, an even more subtle cognitive move that occurs after the primacy of the aesthetic encounter but before the problem statement.

Before one may state a problem, they must *judge* (a cognitive act) an indeterminate situation to be “problematic.” In a section of his *Logic* titled “*Institution of a Problem*,” Dewey (1938b) states:

The unsettled or indeterminate situation might have been called a problematic situation. This name would have been, however, proleptic and anticipatory. The indeterminate situation becomes problematic in the very process of being subjected to inquiry [. . .]. There is nothing intellectual or cognitive in the existence of such situations, although they are the necessary condition of cognitive operations or inquiry. In themselves they are precognitive. The first result of evocation of inquiry is that the situation is taken, adjudged, to be problematic. To see that a situation requires inquiry is the initial step in inquiry. (100)

The more poignant the experience of an indeterminate situation, the more likely we are to have an embodied need and desire to understand something novel and exhilarating even if it is a bit alarming. It is precisely such a judgment that constitutes the nonteleological teachable moment.

Poignant aesthetic experiences are especially likely to be precursors of judgements that a situation is problematic because of its intensity although any aesthetic experience may lead to the next step:

A problem represents the partial transformation by inquiry of a problematic situation into a determinate situation. It is a familiar and significant saying that a problem well put is half-solved. To find out *what* the problem and problems are which a problematic situation presents to be inquired into, is to be well along in inquiry. (111-112)

Once the student, and perhaps the teacher too, judge that a situation is problematic and then restate the pedagogical problem initially required by the curriculum, the nonteleological teachable moment has been seized, and new desires, intentions, and purpose take over. A new inquiry is initiated.

Before concluding this section, let us return to the motivational logic of existentially meaningful education mentioned earlier. A genuinely problematic situation and a genuine problem are much different than what one might call a pseudo-situation and a pseudo-problem where the student's goal is extrinsically motivated to get a good enough grade or at least avoid punishment. The student is only engaged indirectly with subject matter as some sort of stuff that must be digested like a sour pill because it is supposed to be good for them. As Dewey puts it:

The [student's] problems are not his: or, rather, they are his only as a [student], not as a human being [. . .]. His problem becomes that of finding out what the teacher wants, what will satisfy the teacher in recitation and examination and outward deportment. Relationship to subject matter is no longer direct. (Dewey, 1916: 163)

The teachable moment presents a genuine problematic situation where students and teachers alike may become directly and passionately motivated to engage in joint inquiry.

Second step: Inquiry as the learning trajectory

With the judgment that an indeterminate situation is problematic, whether explicitly stated or not, we have already passed over into the cognitive domain. Once we have a stated problem, we must remember that inquiry intends to transform the indeterminate situation into a unified determinate situation. This establishes the learning trajectory of the nascent teachable moment.

The trajectory of inquiry is rarely as linear and orderly as commonly thought. Dewey distinguishes five phases, or functions, of inquiry in the second step of the learning trajectory: (1) suggestions for possible solutions, (2) intellectualization of indeterminate qualitative situation into a problem to be solved, (3) formulation of working hypotheses, (4) reasoning, and (5) experimental corroboration or verification. However, these are just some useful distinctions in a continuous, complicated, recursive process where phases are sometimes collapsed into each other; in some cases, there are "definite subphases, intuition may intervene at any time, and problems restated" (207). There is no predetermined fixed sequence.

In state-mandated learning, the requirement is a linear and teleological learning trajectory. In daily life, the learning trajectory is usually nonlinear and nonteleological in Dewey's and Joas' sense. The catastrophe is that state-mandated curriculum tacitly teaches students to think inquiry and learning are something they are not. There "is nothing especially sacred about the number five", referring to the five phases of inquiry (Dewey, 1933: 207). The five phases, however, do establish an overall trajectory to inquiry.

As Dewey's definition of inquiry above suggests, the five phases of the trajectory lie between "two limits of every unit of thinking;" there is "a perplexed, troubled, or confused situation at the beginning and a cleared-up, unified, resolved situation at the close" (Dewey, 1933: 199-200). Dewey calls the first limit "*pre-reflective*" and the latter the "*post-reflective*" (200). The *pre-reflective* noncognitive situation sets the context of inquiry, the *terminus a quo* of a disruptive doubtful situation wherein we are confused and do not know what to do next. Of itself, there "is nothing intellectual or cognitive in the existence of such situations" (1938a: 111). The

post-reflective, the *terminus ad quem*, transpires when “doubt has been dispelled” (1933: 200). The learning trajectory is from doubt and confusion to doubt and confusion dispelled.

The pre-reflective *terminus a quo* is the immediacy of the non-cognitive qualitative situation. It is the primacy of the aesthetic encounter as the classical Greek *aisthetikos*. For the persons being part of this disruptive encounter, the encounter is felt as an aesthetical experience, which becomes a conditional context of a possible inquiry. Should a student have a highly intense aesthetical experience (i.e., a poignant experience), and if it is judged as problematic, we will have a nonteleological teachable moment.

The post-reflective *terminus ad quem* is an aesthetic experience in the more familiar sense. Dewey (1934) calls a consummatory experience, including the resolution of a problematic situation, “an experience”:

[W]e have *an* experience when the material experienced runs its course to fulfillment. Then and then only is it integrated within and demarcated in the general stream of experience from other experiences [. . .]. Such an experience is a whole and carries with it its own individualizing quality and self-sufficiency. It is *an* experience (42).

Scientists and mathematicians have consummatory experiences the same as artists. So too does everyone else. Preparing a good dinner, perhaps accompanied by a well-selected glass of wine, is also a consummatory experience. In such an experience, thought, feeling, and action are unified; needs, desires, and intentions are satisfied; purposes are fulfilled; and capacities are exercised and, possibly with learning, expanded. Both a disrupted sentient experience (*aisthetikos*) and a consummatory experience have a unifying quality, but the unsettled or indeterminate situation disrupts the unity of thought, feeling, and action. Disequilibrium commencing from the rupture of functional coordination of the organism and environment is a fracturing of unifying form.

In “*an* experience”, the “*form* of the whole is therefore present in every member” (62). For Dewey,

Form is a character of every experience that is *an* experience. Art in its specific sense enacts more

deliberately and fully the conditions that effect this unity. *Form may then be defined as the operation of forces that carry the experience of an event, object, scene, and situation to its own integral fulfillment.* (142)

Form is dynamic, not static: “Polarity, or opposition of energies, is everywhere necessary to the definition, the delimitation, that resolves an otherwise uniform mass and expanse into individual forms” (161). Such unity in diversity is temporal as well as spatial. In his *Logic*, Dewey (1938b) remarks: “What I have said in *Art as Experience*, in chapter VII, on “The Natural History of Form” can be carried over, *mutatis mutandis*, to logical forms” (372).

The trajectory of learning in the resolution of a problematic situation in any art is *an* experience of a satisfying consummatory form. The immediate primacy of the aesthetic encounter as disjointed *aisthetikos* lacks a unifying form, which is the objective of inquiry. For the remainder of our paper, we will largely confine our attention to the primacy of the aesthetic encounter and especially poignant aesthetical experience leading to the nonteleological teachable moment.

The first phase of inquiry involves “*suggestions*, in which the mind leaps forward to a possible solution” (Dewey, 1933: 200). Initially, we just continue to act overtly when we encounter a disruption. Only if overt action fails do we develop an “idea of what to do . . . a substitute for direct action. It is a vicarious, anticipatory way of acting, a kind of dramatic rehearsal” (200). Even a vague idea, perhaps a mistaken cognitive intuition, provides preliminary guidance that initiates a process of trial and error, the gathering of data, intelligent elaboration, and the emergence of new and better ideas. We must start somewhere. However, for all of this cognitive activity to occur, one must have already judged a situation to be problematic. We want to especially emphasize the role of intuition in this phase. Dewey (1930) states, “To my mind, Bergson’s contention that intuition precedes conception and goes deeper is correct. Reflection and rational elaboration spring from and make explicit a prior intuition” (249). He then states, “Intuition, in short, signifies the realization of a pervasive quality” (249) that regulates the terms of thought. Intuition is the pre-reflective *terminus a quo*.

The second phase is “intellectualization” (201) of the difficulty or perplexity that has been *felt* (directly

experienced) and is formulated into a named *problem* to be solved, a stated question for which the answer must be sought. Here the inquirer (e.g., a student) strives to explicitly state the problem. The non-cognitive situation becomes a cognitive problem. Recall that Dewey recognizes the wisdom of the claim that “a question well put is half answered” (201). If our intuitions and preliminary reflections fail us, then we may mis-take and mis-state the problem, almost assuring subsequent inquiry will become confused and go astray. We do not know if our statement of the problem is correct until the solution is reached. We must be constantly prepared to restate mis-stated problems.

The third phase or function is the formulation and use of a suggestion, or “working hypothesis” (203), used as a “guiding idea” (203) to initiate and direct observation, and perform operations collecting collections of factual material. A good idea “is controlled by the diagnosis” of the situation (203). Although always subject to falsification, a working hypothesis (or even an entire theory) provides more rigorous control of further inquiry. We want to call attention to Dewey’s emphasis on how inquiry requires approaching ideas *as* ideas. Treating ideas as truths in themselves would take away any reason for scrupulous examination of them. ‘As fixed truths’, Dewey (1938a: 86) argues, ‘they must be accepted and that is the end of the matter’. Ideas, on the contrary, are subject to continuous testing and revision.

The next phase is “Reasoning (In the Narrower Sense)” (203). It involves the mental elaboration of the idea or supposition as an idea or supposition – that is, reasoning, in the narrow sense of formally deducing consequences from ideas. Accordingly, “Reasoning helps extend knowledge, while at the same time it depends upon what is already known and upon the facilities that exist for communicating knowledge and making it a public, open resource” (204). Nonetheless, frequently, “Conjectures that seem plausible at first sight are often found unfit or even absurd when their full consequences are traced out” (204). Sometimes abstract symbolic reasoning may lead to confusion, absurdity, or even outright contradiction. Other times the reasoning is consistent and valid, but the conclusion itself is not empirically sound because the original idea or ideas (e.g., theory) were

not true or only partly true, which brings us to the final phase.

The fifth and final phase is testing the hypothesis by overt action. This involves seeking “*experimental corroboration*, or *verification*, of the conjectural idea” via the empirical consequences derived from it (205). Should the hypothesis fail to coordinate the situation, one must return to phases one, two, three, or four, find the mistake(s), and make the required corrections. The fifth phase, if successful, is followed by the post-reflective “Ahh” of consummatory satisfaction having arrived at a unifying form.

The relation between the first and second model

Before we go on to the third model, let us dwell a moment on how the second model depends upon, emerges from, and refines the first model, making it more didactically productive for more fully understanding poignant experiences and the nonteleological teachable moment.

According to Dewey, it is a mistake to think that the objective experience of what is encountered and the subjective experience of the quality felt while encountering it constitute two separate experiences: they are one. Otherwise, we are left with an irreconcilable dualism. It is only after an inquiry, after reflection, that these two aspects can be distinguished. They do not present two separate experiences because they are rooted in the same encounter taken two different ways.

Dewey (1895) provides the example of an unexpected encounter with a bear and the feelings connected to this encounter to illustrate this point. The experience of the encountered situation and our subsequent bodily feelings are part of the same experience. After an inquiry, the experience originating in the same encounter can therefore:

[B]e described equally well as “that terrible bear,” or “Oh, how frightened I am.” It is precisely and identically the same actual concrete experience and the “bear” considered as one experience, and the fright as another, are distinctions introduced in reflection upon this experience, not separate experience. (176)

Thus, it is through reflection, through inquiry, that one can distinguish and describe the bear

and the bodily reactions in two equally correct ways because they are part of the same experience caused by the same encounter where the participants in the encounter get meaning reciprocally and simultaneously.

Later, Dewey would realize that primordially we begin with an immediate and pervasive quality, and naming itself depends upon the learning to use language of participating communities of shared social practice, including inquiry. The name “bear” refers to a bundle of qualities that one must learn to determine the reference bear. While young, we must learn the qualitative differences between bears and large furry dogs. We must also learn the differences between bears in the woods and teddy bears, which have many of the same qualities.

The forgoing is why it is important to emphasize the primacy of the aesthetic encounter (*aisthetikos*) as transactional and the transactional encounter as aesthetic. To emphasize the latter also means that in the primacy of the aesthetic encounter the encountered is not yet defined and maybe not even identified. When you are walking in the dark and suddenly feel something touching your back, the aesthetic experience will consist of a bodily feeling of touch along with the bodily feeling of quality – fear. It is only after an inquiry that you can identify what was the cause of the touch, i.e., what was encountered. In the three empirical examples we discuss below, the aesthetic experiences have family resemblances to the touch and the sudden sighting of a bear. They can all be called disruptive poignant aesthetic experiences in the sense of *aisthetikos* as discussed above.

Companion Meaning Analysis

The third model is companion meaning analysis (CMA). The model was inspired by Dewey’s (1938b) notion of “collateral learning” and what Schwab (1962) calls “meta-learning” and was theoretically and methodologically further developed regarding the implicit socialization that is unavoidable when teaching is focused on students’ learning of knowledge (Östman, 1994, 1995, 1998; Östman & Roberts, 1994; Roberts and Östman, 1998).² Initially, the point of companion meaning analysis (CMA) was “to identify norms in an activity associated with the learning of knowledge” (Östman,

2008: 85). CMA started with analyses of texts (for example, textbooks, policy documents, and tests) but was later used in analyses of communication in science classrooms. At the same time, the definition of companion meaning was further developed, and it was empirically illustrated (for example Lundqvist, Almquist & Östman, 2009) that in all teaching there are certain things in the foreground, for example, having students learn scientific knowledge. To make this foregrounded learning possible, however, the students need to learn things that are a prerequisite for it. This learning is in the background but is a necessary background for the foreground learning to be possible. Thus, in any learning situation, there is always a learning that accompanies the foreground. This learning can either be new or take the form of a consolidation and refinement of earlier learning. This background learning does not merely accompany the foregrounded learning, but it is logically an absolute prerequisite for the latter to be actualized.

In the years following Östman (2008), CMA has expanded beyond the confines of the initial formulations; we will mention three of these developments. Many of these refinements are reflected in the present paper. The first important expansion drew inspiration from Putnam’s (2002) concept of epistemic values (see for example Östman & Almquist, 2011), making it possible to extend CMA beyond science education to, in principle, all teaching and learning activities. Thus, in any subject, epistemic values are taught explicitly, but sometimes they are learned implicitly as companion meanings. Indeed, to avoid controversy, a great deal of standardized curricula presents itself as value-neutral. More generally, the predominant values of standardized curriculum focus almost entirely on the epistemic values of the various school subjects. Many epistemic values are present in Dewey’s five phases. Other values include disinterested inquiry, consistency, falsifiability, justification, and much more.³ Also a crucial development of CMA, by the idea of epistemic values, is that the foregrounded learning does not have to be knowledge and skills, but can also be values, attitudes, identities, etc. – that is, learning content associated with socialization. Thus, a sharp, dualistic distinction between learning knowledge and skills on the one hand and socialization in terms of epistemic values, worldviews, and social identity on the other is unsustainable. When learning knowledge is foregrounded,

socialization occurs simultaneously, either as an explicit learning of epistemic values or as an indirect learning of epistemic values as companion meanings. Analogously, when values, attitudes, social identities, etc. are foregrounded, the students will learn knowledge and skills as companions as well.

The second development of the CMA was the specification through introducing the concept of “companion values.” This raises the possibility that a companion meaning can suddenly become viewed and experienced, for example, as moral or aesthetic values instead of just epistemic values. On such occasions, students suddenly experience companion meanings as companion values which can take the form of, for example, moral or political companion values. Dewey’s comment in what follows does exemplify the movement from companion meaning to moral deliberation and vice versa but can also be extended to epistemological, aesthetical, etc. actions as well:

The foremost conclusion is that morals have to do with all activity into which alternative possibilities enter. For wherever they enter a difference between better and worse arises [. . .]. Yet it is a perilous error to draw a hard and fast line between action into which deliberation and choice enter and activity due to impulse and matter-of-fact habit . . . every reflective choice tends to relegate some conscious issue into a deed or habit henceforth taken for granted and not thought upon. Potentially therefore every and any act is within the scope of morals, being a candidate for possible judgement [sic] with respect to its better-or-worse quality. (Dewey, 1922: 279)

Part of this advancement was the recognition that in an inquiry characterized by deliberation, the situation is very different regarding the idea of foreground and background than in an inquiry dealing with knowledge. In deliberation, there exists a mutual interrogation among two or more *explicit* value spheres – epistemological, moral, political, aesthetical, etc. – that results in prioritizing certain values that are put in the foreground while subordinating others that are, thus, backgrounded.

The third and most recent advance already discussed is the special importance of poignant aesthetic experiences (see Håkansson and Östman, 2022; also, Östman, Van Poeck & Öhman, 2019).

In this paper, we are showing that it is by and through disruptive, passionate, attention-altering poignant aesthetic experiences that different value domains (epistemology, moral, political, aesthetic, etc.) “get into each other’s way” (Garrison et al., 2015: 195) and where “we have a potential educative moment when teacher and student may deliberate together” (195). The authors of the present paper recognize that such moments are better described as nonteleological teachable moments, and that is how we will use CMA below. Thus, it is the explosive possibilities of unsettling poignant aesthetical experiences too, for example, transform the experience of a companion meaning into an experience of a companion value, thereby providing nonteleological teachable moments.

The present paper will also introduce wonder and epiphany as potential companion meanings detectable and analyzable by CMA. One of the definitions for “wonder” in the 2023 Oxford English Dictionary Online reads, “The emotion excited by the perception of something novel and unexpected, or inexplicable; astonishment mingled with perplexity or bewilderment.” This is the kind of emotion one would expect having inquired into a disruptive poignant experience that dismantles our expectations and redirects our thinking which is characteristic of the nonteleological teachable moment. The same dictionary has a definition of “epiphany” as “constituting or containing a significant moment of revelation.”

Before presenting our empirical analyses, we want to mention that companion meanings and values require taking an other-than-modern stance toward values. Habermas (1987) maintains:

By the end of the eighteenth century, science, morality, and art were even institutionally differentiated as realms of activity in which questions of truth, of justice, and of taste were autonomously elaborated, that is, each under its own specific aspect of validity. (19)

The ironclad cultural distinctions between epistemic values, moral/ethical values, and aesthetic/artistic values are incorporated into the common sense of Western modernity and accepted by academicians, politicians, state bureaucrats, and those who design state-mandated curricula. Furthermore, in modernity, these value spheres are typically arranged into a hierarchy with science at the top and aesthetics at

the bottom. One readily sees this in the marginalizing and defunding of the humanities in not only the university but K-12 education as well.

So-called “postmodernism” attempted to invert modernity’s hierarchy of values with scant success. From our pragmatist perspective, this is just as well. As the Dewey-inspired neo-pragmatist Rorty (1991) writes, ‘To be a philosopher of the “modern” sort is precisely to be unwilling either to let these spheres simply coexist uncompetitively, or to reduce the other two to the remaining one’ (170). One could make similar remarks regarding curriculum values in the age of scientific measurement.

CASES

Seize the opportunity: moral actions and ethical reflection

Before we present and discuss the actual case, we want to illustrate how a companion meaning, through an aesthetical encounter, surfaces as an epistemic value.

Regarding the trajectory of learning, what should be foregrounded and backgrounded is often implicated in the tasks assigned to students and thus is part of the disturbance staged by the teacher to be the start of the student’s learning trajectory. Frequently, the background is brought to the front when students are having an aesthetical experience during an ongoing inquiry, as in this very short example from Wickman (2006: 92). Two groups (Rosalind and Sonya as well as Marie and Barbara) sitting beside each other discuss what they have seen while investigating bumblebees. It turns out that Marie and Barbara had found two pairs of wings in their example while Rosalind and Sonya have only found one pair:

Marie: You wrote one pair of wings, but we saw two pairs of wings.

Rosalind: On bumblebees?

Marie: Yes.

Rosalind: Hey but look for another pair. Can I see yours? What it is.

Sonya: Ours got only one pair.

Rosalind: Your damned little . . .

Barbara: They may have fallen off.

. . .

Rosalind: Let’s see if yours got any antennae: Really, it has!

Barbara: Yes, it has antennae.

Rosalind: Our’s some kind of second rate specimen.

Barbara: (laughter)

Rosalind: I don’t think we should take that bumblebee. It wasn’t neat at all . . .

These young women are in the middle of an inquiry investigating insects and their morphology (wings, mouths, antennae, etc.). Marie’s initial comment created a disturbance and doubt for Rosalind and Sonya. Thus, an aesthetic encounter with Marie created a problematic situation for them and elicited an inquiry: they started to compare the bumblebees both groups were investigating. The inquiry had two disappointing conclusions: Rosalind’s and Sonya’s bumblebee was a “second rate specimen”. The example illustrates one epistemic value that many students learn in biology education, namely that the concrete object (in this case one concrete bumblebee) that is to be used in the learning and development of knowledge needs to be representative (for instance, non-broken) since it is only then that it can be used as a means for learning knowledge of morphology that is generalizable (in this case, a knowledge that is valid for all bumblebees in the world). Here, this epistemic value becomes foregrounded thanks to the aesthetical encounters and becomes expressed in the inquiry with phrases like “your damned little . . .” and “It wasn’t neat at all”. Before the aesthetical encounter, the epistemological values were just practiced as a companion meaning. Without the companion meaning being there, the foregrounded task of the investigation would not have been possible to accomplish.

This example also shows that there is another, more general, epistemic value that the students have learned, but it is not up for discussion and valuation, namely the value of reification and manipulation. They are just practiced as companion meanings. These two epistemic values become central in the so-called scientific revolution in the 1600s for guiding the production of knowledge in natural sciences (Von Wright, 1989). Today, the production of scientific knowledge is usually guided by these two epistemic values. To observe and talk about a bumblebee in terms of numbers and such things as

wings and antennae is to use a reifying practice. The learning of any scientific knowledge requires that one also learns to reify the world.

The young women above also take part in the practice of manipulation for the sake of learning: the bumblebee has been caught and killed to become a means of teaching and learning. But again, this epistemic value is not up for discussion as a matter of choice to be made. It is taken for granted and functions as a companion meaning, and it is taken for granted for the students to be part of the learning activity. If these students would not accept or not be able to reify and manipulate nature, they would not be able to learn the morphology of bumblebees through investigation.

But sometimes these taken-for-granted doings are brought up to deliberation and choice in terms of suitable epistemic values for the practice. At other times, companion meanings, through an aesthetic encounter and a poignant aesthetic experience, become foregrounded as moral, political, or existential companion values. In the example below where eight-to-nine-year-old children are visiting a Nature-school⁴, epistemic values that are operating in the background as taken-for-granted companion meanings suddenly appear in the foreground as moral companion values because of a poignant aesthetic experience appearing in an aesthetic encounter with an animal. In the example, the students are gathering animals from a lake and a stream for investigations (i.e., manipulating the animals for the sake of learning). We observed a conversation in a small group of students that discovered that a salamander in a jar was dying, and the students tried to save it by releasing it into the lake where they caught it.

1. Olle: Now we hold it [the jar]
2. Max: Everybody
3. Linus: No wait, you to
4. Max: Careful
5. Nellie: Bye-bye [They pour the water and the Salamander into the lake]
6. Linus: Is he out (of the jar)?
7. Max and Olle: Yes!
8. Olle: I cannot see it!
9. Max: There (pointing at the water)
10. Nellie: No, it does not live
11. Olle: Yes, it makes it, it makes it, it is swimming!!
12. Max: No

13. Olle: Yes

14. Linus: Yes, it swims

15. Nellie: This is almost cruelty to animals

16. Anton: He did like this [raises his hands in the air]. He is dead scared.

17. Victor: It survives!

The students have been practicing the epistemic value of manipulation to gather animals for the purpose of investigation and learning. This norm is practiced in the inquiry when they are suddenly disrupted by a poignant experience that comes with the aesthetic encounter of seeing the salamander dying. A problematic situation follows the aesthetic encounter: they want to save the salamander, and an inquiry starts. The excerpt above shows the fifth phase of an inquiry: testing a hypothesis by overt moral action. From here on, the salamander being an animal amongst other animals to be collected becomes, transactionally, a concrete salamander to be saved. In the effort to save the life of the salamander, the students express poignant, spontaneously moving, and strong moral feelings and care for the salamander.

Through this aesthetic encounter and poignant experience, the student's motivation and role evolved from collecting and investigating the salamander as part of a task given by the teacher to them as learners to the students acting as people driven by their moral values, motivating them to save the salamander, whose life is jeopardized by them practicing the epistemic scientific value of manipulation, in this case, the collection of animals. Value domains conflict. One of the students (Nellie), as part of a reflection on what has happened, explicitly questions the activity of collecting animals: "This is almost cruelty to animals". What has happened here is that the companion meaning, through the poignant experience, becomes surfaced as a companion value, not as an epistemic value, i.e., as a value that is related to the specific practice, nor as a value that concerns how to deal with animals in general, regardless of practice. Thus, the companion meaning, the practiced epistemic value, surfaced as an ethical companion value that Nellie questions as cruelty.

The day ends with a collective assembly where students are supposed to share their experiences. Olle was sharing the experiences of the group: 'When it is dying then it lays totally still and huddles as under a leaf of some kind.' The teacher who had

another agenda for the investigation responded ‘But we do talk about the lizard now. Do you know why the male looks like that, with a little more thorny skin?’ In another context, Olle’s sharing of experiences of the dying salamander and their effort to save it could have been used as a nonteleological moment where the whole group of students could have been allowed to express their emotional experiences, wonder, and attachments to the animals they have caught as well as initiate an ethical discussion about collecting animals.

Seize the opportunity: epiphany and wonder

This example resembles the first one in that the nonteleological teachable moment is unplanned; it just happens. The difference is what the poignant experience implicates and where it leads. In the example below, secondary school students visit a nature reserve to conduct a ‘study of the biotope’, and we enter when the students are supposed to conduct a biotic water analysis to determine the quality of the water.⁵ The teacher introduces the activity:

I don’t have to explain to you how important it is to know the water quality. You all know that as humans we are actually in the middle of that water cycle, that we largely consist of water and that it always needs to be replenished and that it is always removed again. So we are actually right in the middle of that water cycle, but of course we need pure and clean fresh water. So determining water quality is particularly important. That has to do with being able to live or not being able to live. How are we going to do that? We’re going to go to the ditch, we’re going to shovel, we’re going to try to scoop and catch as many animals as possible in pots and then we’re going to name them here afterwards. And based on the species we find, we can then know what quality of water it is. So, so to speak, we first go on the hunt and when we have the loot we come and name it.

The epistemic value of the activity is to “catch as many animals as possible”. While a group of students are getting water, they encounter tadpoles and get fascinated.

1. Student: Oh man, so many tadpoles.
2. Student: Can you see that clearly from there?

3. Student: Yes, there are so many of them.
4. Student: Do you have one?
5. Student: Are there animals in there?
6. Teacher: Can you come? [...] Bring the buckets so we can fill the bins.

The students poured the water into the bins, and the conversation continued:

1. Teacher: Okay, put the bucket under the bench.
2. Student: Oooh!
3. Teacher: We already see a lot of life. All those little moving things are actually so small, you could say you need a microscope for that, but those are water fleas and small shrimps, they actually are part of the base of the food chain. And we already see a tadpole here.
4. Student: Two, and there too. (the young women look in the bins)
5. Teacher: So the idea is to collect as many different animals as possible, this one is the same as that there and you might be able to take in a tadpole, but we are not going to fill our pots with tadpoles.
6. Student: That’s nice.
7. Teacher: Yes, but the intention is to do a water analysis and not to play.

The first student seems to be knocked back by the encounter with the tadpole, as expressed through immediate utterances in the actual encounter, such as “Oh man”. This utterance is followed by what can be seen as an expression of a feeling of deep wonder: “so many tadpoles”. Thus, the student’s poignant experience occurring through the aesthetic encounter with the tadpoles is almost directly made meaningful as a wonder. Such a knocked-back experience, together with an expression of a feeling of wonder, can be compared to people’s retrospective descriptions of so-called epiphanies. The student’s epiphany was made public, and it attracted attention by peers. After that, exuberant wonder is expressed during the conversation, for example, through such utterances as “Oooh” but also by the continued attention to the tadpoles and other animals they found, regardless of the teacher’s many attempts to remind them to follow the epistemic value set by her (row 9 and 11) and to keep the purpose of the activity (row 13) in focus.

1. Student: I’m going to take as many tadpoles as possible.

2. Student: Me too, I'm working on that too.
3. Teacher: You shouldn't collect the tadpoles, we can't use them.
4. [. . .]
5. Student: I see that there are a lot of fish in the lock, right?
6. Teacher: But yeah, we don't need those fish to determine the water quality.

The sharing of an epiphany by one student was the trigger for the development of a collective wonder (and maybe also a collective epiphany), which became a driving force for the students' inquiry. Wonder thus became an explicit epistemic value for *their* inquiry while the teacher, almost in vain, emphasized the lesson's purpose and *her* explicit epistemic value (rows 16 and 19).

These students are driven by an intrinsic interest, an interest that is connected to wonder and probably also to epiphany. Wonder, as a bodily feeling, is one way of retrospectively describing the experience of the encountered situation. This experience can, because of the transactional character of meaning-making, be equally well described in terms of "very fascinating animals". Just like in Dewey's example of the unexpected encounter with a bear (see above), the encountered situation (tadpoles) and the bodily feeling (wonder) acquire meaning simultaneously and reciprocally. Both come out of the same poignant aesthetical experience, of the same aesthetical encounter. The intrinsic interest is therefore due to the specific transactional attachment created in and through the encounters.

Wonder as a feeling can be seen as close to a worshipful feeling or a feeling of piety towards nature, or at least it could have been brought up for discussion as such and thereby pave the way for sharing our emotional attachments to nature as well as our moral relations to nature. This is one way that the nonteleological teachable moment, opened up by a disruptive poignant experience, could have been used to expand learning.

Teaching for the nonteleological teachable moment

In the above cases, the possibility of a non-teleological teachable moment suddenly occurs in an

ongoing inquiry of the students. Here, we explore how nonteleological teaching can become part of the teaching plan for teachers. Such planning cannot be teleological in the sense that the objective is decided in rigid detail; rather, the teacher needs to pursue a course where the outcome is left open to the students, at least to some extent. Thus, the teaching would aim to induce students to deliberate (i.e., inquiry) about values starting from a poignant experience. Using Joas' terminology, one could see such teaching as being guided by a nonteleological intentionality. In the following example, this form of intentionality is used where the teaching is about deliberation of political values – that is, values about what is correct or right concerning how to organize society. The deliberation is initiated by a poignant aesthetical experience, which means that the deliberation involves the students as persons where something important would be at stake for them: deep beliefs, values, commitments, and such.

The example below is from a guided tour of a CSA farm (Community Supported Agriculture) for a group of students in bioscience engineering.⁶ As it was the farmer who guided the tour, we consider him as the educator in this activity. At the start of the tour, the farmer introduces the idea of what he calls 'the three Ps'. Planet, People, and Profit are presented as three concerns that one must take into account as a farmer. The farmer explains that he believes that the Planet should be the first concern but that he realizes that others might think People or Profit should be prioritized. Thus, he establishes a prioritizing framework for the reasoning, and he tries to start a deliberation with the students. He urges them to articulate their standpoints.

1. Farmer: Now I don't know if this ties in somehow with your vision of agriculture? . . . (He looks around in the group. Students take notes, others look at him. Nobody answers his question.)
2. Farmer: Shall I answer how I think you look at this? Then you can contest me if (inaudible) . . .
3. (laughter)
4. Student 1: Agriculture must be productive. So much . . . not as much as possible, it's still the intention, yes to produce food and to make sure there's enough.
5. Farmer: Yes, so for you the P for profit takes precedence?
6. Student 1: Yes (nodding)

Further on in the discussion, there was a conversation about agricultural subsidies. After the farmer explained that they opt for small-scale, extensive agriculture and therefore are not eligible to receive subsidies which are preserved for big investments to intensify the production (which clashes with his prioritization of 'planet'), the conversation continues:

1. Farmer: I don't receive any subsidies. And I also think that it would be very good to say that we are putting an end to them.

2. Student 2: But you also don't live from [agriculture]! (original emphasis)(raises her voice)

3. Farmer: I do live from it. (original emphasis)

4. Student 2: Oh, you said yourself that you don't pay yourself a wage! (raises her voice)

5. Farmer: Yes but that's different. You don't need a wage to be able to live from it. I eat from it. That's a big difference. If you think I've got 2,000 euro on my account at the end of the month. I think I've got 900 euro or something like that on my account.

6. Student 2: Yes but food alone doesn't get you far.

7. Farmer: No, but yes, that's what we have to do. That's the transition we have to make. That's the change we have to bring about. I think some major steps are going to be necessary to consciously address or handle it.

8. Student 1: Not everyone can do it though. It is nevertheless . . .

9. Farmer: Why not?

10. Student 1: What would we eat? If everyone . . . There's more, I mean yes . . .

11. Farmer: Then I'd say yes, ninety percent of farming throughout the world is managed like this.

12. Student 2: Yes, there are also I don't know how many going hungry.

Both the content of student 2's intervention – "you don't live from it" (line 8) and "Oh, you said yourself that you don't pay yourself a wage!" (line 19) – and the raising of her voice show that the encounter with the farmers' statements involved a poignant aesthetical experience, cognitivised and expressed with a strong emotional emphasis that she is upset. Indeed, earlier during the conversation, this student had mentioned that her parents run a conventional pig farm. Thus, decisions about agricultural subsidies put something at stake that concerns her deeply. Her family's livelihood depends on it. The farmer's

proposal (row 7) involves the subordination of something that she highly values, which then comes to the forefront as a companion value.

The student's expression of a poignant experience is followed by a deliberation where incommensurable values are at stake: Is it Planet, People, or Profit that should be prioritized with the consequence that the other two would be subordinated? During the whole deliberation, the farmer and the students are personally, and deeply engaged in the deliberation, as reflected in such a strong expressive mode as 'I do' and the raise of the student's voice. For them, their values are at stake: they don't want their values to become backgrounded as companion values, as part of others' values becoming foregrounded. Furthermore, transactionally, the participants in the struggle become *sensorially* and cognitively connected to each other as antagonists. The values deliberated concern how to organize society's agriculture, and the deliberation is thus political.

The intention of the farmer, expressed in the first conversation as he urged them to contest him, succeeded. A nonteleological teachable moment opened up. To succeed cannot be taken for granted even if the teaching is very well planned. There are many reasons why it does not succeed; in this example, it could have been that the students did not want to put themselves at risk by publicly expressing their beliefs.

DISCUSSION AND CONCLUSION

We described three different types of nonteleological teachable moments, each of them originating in a poignant experience. In the first case, we saw a poignant experience eliciting moral action on the part of the students, which gave rise to a teachable moment that could be grasped as an opportunity for ethical reflection. In the second case, an aesthetic encounter elicited an epiphany for one student that triggered a collective wonder that became the epistemic value driving students' intrinsically motivated inquiry and pushed the lesson's purpose and the teacher's epistemic value in the background. In both cases, the poignant experience and, thus, the nonteleological teachable moment emerged unexpectedly and spontaneously within a teleological teaching practice. As such, realizing its educative potential

depends on whether the opportunity is seized. In the third case, in contrast, the poignant experience was deliberately strived for as part of the teacher's nonteleological intention to stage an open-ended political deliberation where irreconcilable values are at stake that concern the participants deeply.

The three presented pragmatist didactical models allowed us to make sense of these empirical observations and the educative potential involved. With the help of the first model, we gain insight into the value of encounters – intentionally staged or grasped as an opportunity when naturally emerging – that create disruptive poignant experiences as a trigger for learning. Applied to the cases, it shows how this can nourish ethical reflection, the development of epistemic values, and political deliberation. The second model helps us to understand the trajectory of the learning processes that result from this, evolving from a pre-cognitive primacy of the aesthetic encounter and associated poignant experiences, over the initial cognitive judgment of the latter as being problematic (although still indeterminate), into a five-phased inquiry that, if successful, results in an aesthetic experience of fulfillment. Throughout this trajectory, we can further specify with the third model, that companion meanings and values are at play which involve a permanently present possibility of sudden shifts in what is in the foreground and background, which values are prioritized or subordinated, and how values are creatively transformed.

The pedagogical value of nonteleological teachable moments is (at least) fourfold. First, as illustrated by the presented cases, in such moments students are highly internally motivated to learn. Teachers who make good use of nonteleological teaching can succeed in not only teaching more effectively but, not surprisingly, even increasing test scores. Poignant experiences that are judged to be problematic situations are intrinsically motivating and require an entirely new and creative inquiry to resolve. This allows the learning community to better understand the logic of discovery. The original inquiry may be abandoned for an interval while effort and inquiry are redirected. This is the nonteleological teachable moment in full force. A second pedagogical value is that nonteleological teachable moments triggered by poignant experiences are subjectivating. They appeal to the participants as persons, as human beings engaging in self-chosen inquiry, developing

personal values, engaging in existential inquiry, etc., and not merely as students compliantly fulfilling tasks given learning outcomes predetermined by others. Thirdly, a potential teachable moment adequately seized can give rise to collective inquiry and learning in which the object of the poignant experience becomes a shared matter of concern. And, finally, nonteleological teachable moments are incubators for creativity. It is common for meanings and values to undergo modification during the course of normal inquiry within the complex reticulated five-phase process depicted above. This is due to the nonteleological nature of intentionality in any course of inquiry. Standardized curricula and scripted teaching suppress inquiry. Even so-called inquiry learning suppresses the true nature of inquiry by assuming predetermined ends. Nonteleological teachable moments are in that sense liberating and emancipatory.

We hope that the presented models, illustrated with the discussed cases, can inspire much-needed further research on how to create and seize opportunities for nonteleological teachable moments and how to optimally realize their pedagogical potential. The latter depends on teachers' abilities and possibilities to adequately respond to unpredictable aesthetic encounters and expressions of poignant experiences. Besides capacities for creative improvisation, an important factor, here, is the available space and time for flexibility, serendipity, and confidence in the pedagogical legitimacy of unplanned yet well-supported inquiry. This time and space is heavily impacted by education policies that are beyond the control of teachers. The last thing we want is to blame teachers for those observed instances where emerging opportunities for nonteleological teachable moments were not (fully) grasped.

NOTES

1. We agree with Dewey (1925) that "science is an art" whose artifact is knowledge (268). We also agree that science is a "handmaiden" of the other arts because knowledge is useful to every art (269; see also LW 10: 33).
2. In the first analyses the term discursive meanings was used, but starting 1994 (Östman & Roberts, 1994) the term companion meaning was introduced in order to

emphasize the logical unavoidable implicit socialization that follows when learning knowledge.

3. To be clear, we have no problems *per se* with either the values present in Dewey's five phases, nor with the values just mentioned. We are disturbed by the claims of epistemic value neutrality mentioned earlier, since it has negative didactical consequences.
4. This empirical example was first published in Andersson et al. (2015).
5. This empirical example was first published in Van Poeck et al. (2016).
6. This empirical example was first published in Van Poeck & Vandenabeele (2014) and Van Poeck & Östman (2018).

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